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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/009,248	01/20/1998	KENJI OSAWA	P972636	7174

26263 7590 11/06/2002

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EXAMINER

GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/009,248

Applicant(s)

OSAWA ET AL.

Examiner

David E Graybill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-17 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 10-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 5, 6, 10, 12-14, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly the subject matter which applicant regards as the invention.

In claims 1 and 5 the limitation "the sealing ring" is unclear because the limitation refers to a "sealing ring" but there is no apparent previous claim-recitation of a sealing ring.

In the rejections infra, reference labels are generally recited only for the first recitation of identical claim language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a),

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the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5, 6 and 10-12 are rejected under 35 U.S.C. 103(a) as obvious over the combination of Ohsawa (5756377) and Yamasaki (5554885).

At column 4, lines 25-29, column 5, lines 8-11, column 6, lines 53-56, column 7, line 67 to column 8, line 7, and column 9, line 18 to column 10, line 17 Ohsawa teaches the following:

1. A semiconductor device, comprising: a semiconductor chip 4 having a plurality of electrode pads formed at a periphery of a front surface thereof; a wiring film formed on a front surface side of said semiconductor chip by laminating an insulation film 6 on a lead 13 pattern; an outer connection terminal 7 formed so as to protrude above said wiring film; a plurality of leads 13 extending from said wiring film and connected to the electrode pads on said semiconductor chip at extended tip ends 13i

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thereof; an external ring 10 provided so as to surround said semiconductor chip and formed with a plurality of holes positioned entirely outside of a perimeter edge of the semiconductor chip; and a sealing resin 8 filled between said semiconductor chip and said external ring the sealing resin further being filled in the through holes to increase the contact between the sealing resin and the external ring which strengthens the bond between the sealing ring and the external ring.

2. A semiconductor device according to 1, further comprising an outwardly expanded open portion formed on an inner circumferential surface of said external ring and positioned on a rear surface side of said semiconductor chip.

3. A lead frame, comprising: a wiring film formed by laminating an insulation film 6 on a lead 13 pattern; an external connection terminal 7 formed so as to protrude above said wiring film; a plurality of leads 13 extending from said wiring film and forming connecting portions to electrode pads on a semiconductor chip 4 at extended tip ends 13i thereof; and an external ring 10 provided outside said wiring film, having an opening portion capable of housing said semiconductor chip and formed with a plurality of holes positioned entirely outside of a perimeter edge of the semiconductor chip when the opening

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portion houses the semiconductor chip wherein an outwardly extending open portion is formed on the opening portion and positioned on a rear surface side of the semiconductor chip.

5. An electronic apparatus including a printed wiring board loaded with a semiconductor chip, said semiconductor device, comprising: a semiconductor chip 4 having a plurality of electrode pads formed at a periphery of a front surface thereof; a wiring film formed on a front surface side of said semiconductor chip by laminating an insulation film 6 on lead 13 patterns; an outer connection terminal 7 formed so as to protrude above said wiring film; a plurality of leads 13 extending from said wiring film and connected to the electrode pads on said semiconductor chip at extended tip ends 13i thereof; an external ring 10 provided so as to surround said semiconductor chip and, formed with a plurality of holes positioned entirely outside of a perimeter edge of the semiconductor chip; and a sealing resin 8 filled between said semiconductor chip and said external ring, the sealing resin further being filled in the through holes to increase the contact area between the sealing resin and the external ring which strengthens the bond between the sealing ring and the external ring, wherein said external connection terminal and an electrode on said printed wiring board are connected.

6. An electronic apparatus according to 5, further comprising an outwardly expanded open portion formed on an inner circumferential surface of said external ring and positioned on a rear surface side of said semiconductor chip.

10. A semiconductor device according to 1, wherein the external ring has an open top and an open bottom and is entirely spaced away from the semiconductor chip.

11. A lead frame device according to 3, wherein the external ring has an open top and an open bottom and is entirely spaced away from the semiconductor chip when the opening portion houses the semiconductor chip.

12. An electronic apparatus according to 5, wherein the external ring has an open top and an open bottom and is entirely spaced away from the semiconductor chip.

Although, as cited, Ohsawa teaches all of the limitations of the instant invention, including a device and an apparatus formed with a plurality of holes positioned entirely outside of a perimeter edge of the semiconductor chip, and a device comprising wherein the external connection terminal and an electrode on a printed wiring board are connected, these limitations do not appear to be explicitly taught in one embodiment containing all of the instant limitations. Nonetheless, it would have been obvious to combine these

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particular limitations of the embodiments of Ohsawa because it would facilitate miniaturization, manufacturing convenience and external electrical connection.

To further clarify the teachings of an outwardly expanded open portion formed on an inner circumferential surface of said external ring and positioned on a rear surface side of said semiconductor chip, and wherein an outwardly extending open portion is formed on the opening portion and positioned on a rear surface side of the semiconductor chip, attention is directed to Figure 6B, wherein these limitations are illustrated.

However, Ohsawa does not appear to explicitly teach the sealing resin further being filled in through holes to increase the contact between the sealing resin and the external ring which strengthens the bond between the sealing ring and the external ring.

Notwithstanding, at column 6, lines 5-12, column 6, line 28 to column 7, line 4, and column 9, line 62 to column 10, line 56, Yamasaki teaches a sealing resin 50, 52 further being filled in through holes 14, 16 to increase the contact between the sealing resin and an external ring 10 which strengthens the bond between the sealing resin and the external ring. Moreover, it would have been obvious to combine the product of Yamasaki with

the product of Ohsawa because it would strengthen the bond between the sealing resin and the external ring.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohsawa and Yamasaki as applied to claims 1-3, 5, 6 and 10-12, and further in combination with Hassan (5773895).

The combination of Ohsawa and Yamasaki does not appear to explicitly teach wherein the sealing resin is filled in blind holes in the external ring.

Regardless, at column 3, lines 1-15, Hassan teaches that blind holes are functional equivalents in a product wherein sealing resin is filled in a package substrate, similar to the product of the combination of Ohsawa and Yamasaki. Furthermore, it would have been obvious to combine the product Hassan with the product of the combination of Ohsawa and Yamasaki because it would strengthen the bond between the sealing resin and the external ring.

Applicant's remarks filed 3-8-2 have been fully considered and are adequately addressed in the rejection supra.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

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Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/3087724.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
30-Oct-02